Weilun Sun

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Homepage
http://sunweilun.github.com

EDUCATION

Doctor of Philosophy
2014 – present
EECS
UC Berkeley, California, USA
Advisor: Prof. James F. O'Brien

Bachelor of Engineering
2010 – 2014
Computer Science & Technology
Tsinghua University, Beijing, China
Overall GPA: 88/100 Official Overall Ranking: #21 out of 100 students

RESEARCH EXPERIENCE

Anisotropic Spherical Gaussians
Febuary – May, 2013
SIGGRAPH Asia 2013 Technical Paper
Graphics & Geometry Computing Group, TNList, Tsinghua University
Mentor: Dr. Kun Xu

- Investigated the form of Anisotropic Spherical Gaussian (ASG for short).
- Implemented a *Precomputed Radiance Transfer* rendering program based on theories in the paper.
- Proofread derivation of the closed form integral and the convolution expression of ASGs.
- Made most of result figures in the paper.

Sketch2Scene
September, 2012 – January, 2013
SIGGRAPH 2013 Technical Paper
Graphics & Geometry Computing Group, TNList, Tsinghua University
Mentor: Dr. Kun Xu

- Reproduced a single-model retriever based on paper *Sketch-Based Shape Retrieval*.
- Implemented part of the GUI of the project system.
- Discussed the co-retrieval methods in the paper.
- Provided the co-arrangement algorithm in the paper.

Graduation Project of Yan Gu (3rd year PhD candidate at CMU now)
March – May, 2012
Student Research Training Program
Graphics & Geometry Computing Group, TNList, Tsinghua University
Mentor: Dr. Kun Xu

- Reproduced main algorithms of SIGGRAPH Asia 2009 paper *All-Frequency Rendering of Dynamic, Spatial-Varying Reflectance*.

PUBLICATIONS

- "Anisotropic Spherical Gaussians,"
  Proceedings of SIGGRAPH Asia 2013, ACM Transactions on Graphics 32(6), 209:1 - 209:11, 2013.
  Kun Xu, **Wei-Lun Sun**, Zhao Dong, Dan-Yong Zhao, Run-Dong Wu, Shi-Min Hu
- "Sketch2Scene: Sketch-based Co-retrieval and Co-placement of 3D Models,"
  Proceedings of SIGGRAPH 2013, ACM Transactions on Graphics 32(4) , 123:1–123:12, 2013.
  Kun Xu, Kang Chen, Hong-Bo Fu, **Wei-Lun Sun**, Shi-Min Hu

PRESENTATIONS

SIGGRAPH Asia 2013 Technical Paper for *Anisotropic Spherical Gaussians* November 22nd, 2013
SIGGRAPH Asia 2013 Fastforward for *Anisotropic Spherical Gaussians* November 19th, 2013

COURSE PROJECTS

Out-of-Core GPU Path Tracer
November, 2014

Course Project of *Advanced Topics in Computer Systems(CS262a)*, UC Berkeley

- Implemented path tracing on GPU from scratch.
- Supported rendering huge scenes that can not fit into GPU memory by blocking rays querying out of core geometry temporarily.
- Implemented a GPU memory management strategy specialized for path tracing.

Experiment of Clustering Methods
May, 2013

Course Project of *Introduction to Machine Learning*, Tsinghua University

- Replaced k-means clustering used in paper *Sketch-Based Shape Retrieval* with different clustering methods including k-medoids and fitting Spherical Gaussians with EM algorithm.
- Derived approximate formula needed to fit Spherical Gaussians with EM algorithm.
- Made simple comparisons among different methods by statistics and retrieval results.
- Rearranged code written for *Sketch2Scene* and implemented a complete software with GUI.

Basketball Shooting Game
January 11th – January 13th, 2013

Course Project of *Computer Graphics Real Time and Animation*, Tsinghua University

- Implemented rigid body collision simulation between a sphere and fixed objects in any shape with friction under gravity field.
- Simulated hoop net using simple mass-spring system.
- Created a complete basketball shooting game.(Cooperated with my classmate Yi-Ning Liu)

Fantastic Drummer
October – December, 2012

Course Project of *Principles of Signal Processing*, Tsinghua University

- Leader of our group.
- Implemented drum sound extraction and classification algorithm by Matlab.
  (Cooperated with my classmate Iat-Chong Chan)
- Implemented a game like Taiko no Tatsujin on ios, but can turn any input song with percussion instruments into a playable game level.(Cooperated with my classmate Yi-Ning Liu)
- Came up with the idea.

COMPUTER SKILLS

Programming Languages: C/C++, Java, Python, Matlab
Softwares & Applications: OPENCV, OPENGL, GLSL, QT, CUDA
Operating Systems: Windows, Linux, MacOS

HONORS AND AWARDS

2nd Place of Tsinghua Talent Show 2012

- Performed street soccer on stage.

First Prize of Beijing Physics Olympiad for Undergraduate Students 2011